DOCUMENT RESUME

ED 311 670 EC 221 086

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TITLE Public Domain Software in Special Education. No Cheaper Software Anywhere!
PUB DATE Dec 88
NOTE 26p.; Paper presented at the National Conference on Special Education and Technology (Reno, NV, December 11-13, 1988).
PUB TYPE Speeches/Conference Papers (150) -- Guides - Non-Classroom Use (055)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; Computer Managed Instruction; *Computer Uses in Education; *Courseware; *Disabilities; Elementary Secondary Education; *Instructional Materials
IDENTIFIERS *Public Domain Software

ABSTRACT

The paper demonstrates how school districts can have a low cost software library for instruction by utilizing public domain software. Such software can be used to augment the curriculum and to meet the individual needs of special education students. Specific examples of how one school district has used public domain software in computer-assisted instruction are described. An introductory section explains what public domain and user supported software are. Selection criteria are offered to aid in the selection of software for classroom uses or for a specific student. Applications in specific curricular areas are considered including examples of how such software has been integrated into science, mathematics, social studies, reading, language arts, problem solving, and fine arts curricular areas. Finally, examples of the use of public domain software in instructional support are given including instructional management, electronic bulletin boards, word processing, and programming. Specific sections cover such topics as: "Copying Apple Public Domain Disks"; "Getting Apple Public Domain Software to Run"; "Getting IBM Public Domain Software to Work"; "Public Domain Vendors"; and "Computer Resources for Teachers." Also included is the script for a slide show presentation. (DB)

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# PUBLIC DOMAIN SOFTWARE IN SPECIAL EDUCATION.

## NO CHEAPER SOFTWARE ANYWHERE!

ED311670

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A paper presented at the National Conference on Special Education and Technology. Reno, Nevada. December 11 - 13, 1988.

EC 221086



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**BACKGROUND**

One of the principal challenges that educators must face today is providing a growing number of instructional services to special education students in the face of budgetary constraints and changing school environments. To meet this challenge, many school districts have resorted to utilizing computers to assist with instruction.

According to the literature, computers are gaining wide-spread acceptance as one of the most cost-effective ways to meet these needs. Two recent surveys show that 42 percent of the nation's school districts have one or more microcomputers (Education TURNKEY, 1982).

Elting and Bailey (1987) noted that:

> The microcomputer is a versatile piece of technology. A standard system... can serve a variety of purposes simply by changing the software (p.32)

The presentation will demonstrate how school districts can have a low cost software library for instruction by utilizing PUBLIC DOMAIN SOFTWARE. By working with curriculum specialists, the software can be used to augment the curriculum and to meet the individual needs of special education students.

Specific examples of how one school district has used PUBLIC DOMAIN SOFTWARE in computer - assisted instruction in special education classrooms and for special needs students (e.g., a machine is assigned to a specific student for compensatory purposes) will be described. Some aspects of actual instructional applications will be demonstrated including:

**SELECTION CRITERIA:** review of steps and criteria used to select software for classroom uses or for a specific student's needs depending on handicapping conditions;

**APPLICATIONS IN SPECIFIC CURRICULAR AREAS:** actual examples of how software has been integrated into Science, Mathematics, Social Studies, Reading, Language Arts, Problem Solving, and Fine Arts curricular areas will be presented.

**INSTRUCTIONAL SUPPORT:** examples of public domain software which could be used for in instructional management, tapping electronic bulletin boards, word processing, and programming will be reviewed.

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## PUBLIC DOMAIN AND USER-SUPPORTED SOFTWARE

**Public Domain** software was originated by authors who chose not to seek formal copyright privileges. These authors placed their programs in the "public domain," meaning they are free to anyone who would like to copy and use them. They may be reproduced and distributed at no cost. Because there is no copyright on these programs, they may also be altered by the user. Some of these disks contain the source program, allowing the code to be changed if needed.

Many of these programs were so specific in their use that there was no real market for it. Others were simply written by authors who were designing a program to fill a personal need and simply gave it away.

**User-supported** (ShareWare or FreeWare) software falls under a different legal category. Although these programs are copyrighted, the authors have chosen to release them directly to the user, rather than sell their programs through the retail market. Thus, the user deals directly with the author, eliminating the extra costs of marketing. This allows the user to purchase software at a fraction of the cost of retail.

The authors of user-supported software generally requested a fee from the user. Compared to retail prices, this fee is nominal. The fee usually provides the user with technical support, extended documentation and notification of updates. The fee also provides an incentive to the author to continue developing useful, cost-effective software products.

When running a user-supported program, you will usually see a notice of copyright on the opening screen. You will also see the amount requested by the author if you choose to continue using the program. Although this software is generally copied and distributed freely through user groups and electronic bulletin board systems, the user is legally bound to send the requested fee to the author if he/she decides to continue using the program.

**WHY USE PUBLIC DOMAIN SOFTWARE?** Public domain software can provide a school district with inexpensive yet quality software. You can get short, specialized subroutines to fully formed, powerful word processing, spreadsheets, database packages, and of course games.

It's economical whether you are a beginner or a pro! Our purpose today is to match your need for high quality, low cost software with what we feel is the best available public domain software for education.

Benefits of public domain software include:

--low cost
--wide variety
--low cost
--high quality (if used selectively)
--low cost
--In short, school districts (or schools) can have a low cost library for instruction, administration and instructional support.

**STARTING YOUR PUBLIC**
**DOMAIN SOFTWARE LIBRARY**

The major focus of computer usage in education has shifted from bringing knowledge of the computer and basic computer skills to its teachers and students, to instructional use in every content area. As John Sculley says, the computer is now an appliance. We got along without it before, but life with it is sure easier. It can be compared to your Cuisenart or your blow dryer. We got along without them before, but life is sure easier with them.

Computers, as we well know, are wonderful motivators. But nowadays they are, and should be, used for much more than reinforcement for a job well done. They can now be used with ease in every content area to foster creativity, to reinforce a concept, to develop problem solving capabilities, to aid in information access, and bypass a disability.

The first pieces of software to obtain are the core, or tool software. This set of core software will serve the students' needs as well as the teachers' needs. These include a word processor with printing capabilities, a data base, a spreadsheet, a telecommunications program and programming language. Why these pieces? These pieces can be integrated into any content area, allow for a great range of flexibility, and can be used again and again by the same student on a different project.

**Let's Look At What These Core Pieces Can Achieve:**

1. Using the word processor facilitates writing skills and the printed hardcopy can be a very positive reinforcer.

2. The use of a database is fast becoming a basic skill. The student has to know how to use a data base in order to find and organize information.

3. The use of a spreadsheet is not only beneficial in math applications and problem solving, but is also an organizational tool as well.

4. A programming language, such as Logo or Basic, is good for problem solving with some students.

5. A good telecommunications piece of software is a necessity. A wealth of information lies at the student's fingertips through the telephone lines.

After we have the core software, we look at specific content areas. There is certainly a place for skill and drill software in Special Education, but it need not be boring. Careful selection can make it quite exciting as we will demonstrate.

Criteria for careful selection of software and hardware to support content area goals should be program foundations. What makes a good piece of software? There are many influential factors. Probably the most important is your need. Just what do you need it to do? You must also consider your hardware. Is this particular piece of software compatible with your hardware? Actually the ideal situation is to consider your software options before purchasing your hardware. Preview the program. Work it all the way through. Is the language appropriate for the grade level of your students? If it is drill and skill software, what kind of reward system is available...is the right answer reinforcement more rewarding than the wrong answer reinforcement?

**COPYING PUBLIC DOMAIN DISKS**
**AND GETTING THEM TO RUN**

Often times, someone will give you a PUBLIC DOMAIN SOFTWARE disk for you to copy and use. Since operating systems differ, copying and running disks for the Apple Computer will be presented first. We will also include a list (Table I, see page 8) of what New Mexico Technology and Media (NMTAM) members feel are the 30 best Apple public domain software disks.

IBM copying and running procedures will be handled separately in a section that follows.

**Evaluating Public Domain Software**

What makes a good piece of software? There are many influential factors. Probably the most important is **your need.** Just what do you need it to do? Do you plan to use it just for drill and practice? Do you need a piece of software that can be used in many content areas, i.e., word processing or a data base.? For which content area do you need it?

You must also consider your hardware. Is this particular piece of software **compatible with your hardware**? Do you need a color monitor? What are the memory requirements? Does it have printing capabilities? Does it require a peripheral?

**Try the program yourself.** Work all the way through it. Are there any bugs? If so, are they of a type you can fix? What type of program is it...a skill and drill? or is there problem solving involved? Is it a utility program, one that can be used in many ways and in many areas? If appropriate, let some of your students try it!

Is the **language appropriate** for the grade level in which you intend to use it? Is it appropriate to the grade level in which you teach?

If it is a drill and practice piece of software, what kind of **reward system** is built into it? Are the proper responses appropriately rewarded and the improper responses handled appropriately?

On the following page is a criteria sheet for evaluating software in the Albuquerque Public School district. This sheet is used by our software previewers as the preview commercial software. Many of the criteria is appropriate for public domain software, too.

**Criteria For Software Review**

TITLE:

RATING E: M: H:

YOUR NAME:

COST:

PUBLISHER:

COPYRIGHT:

PLACE OF PUBLICATION:

AUTHOR/PERSONS/GROUP:

ANNOTATION (MAXIMUM OF 226 SPACES):

SUPPORTED GOALS AND OBJECTIVES:

PHYSICAL DESCRIPTION

COMPUTER NAME/EQUIPMENT:
DOS LEVEL:
MEMORY REQUIREMENT:
GUIDE:

SUBJECTS

468755 READING:
633075 MATHEMATICS:
420690 LANGUAGE ARTS:
675098 SCIENCE:
700868 SOCIAL STUDIES:
OTHER:

TYPE OF PROGRAM

191970 DATA FILES:
111700 DRILL AND PRACTICE:
305297 GAMES:
607220 PROBLEM SOLVING:
694222 SIMULATION:
111701 TUTORIAL:
785988 UTILITY:

STUDENT REACTION

ENJOYED: O.K.: HATED:

## THE APPLE

**Copying Apple Public Domain Disks:**

All these instructions are assuming you have a double disk drive.

**COPYING FROM A 5 INCH DISK TO A 5 INCH DISK**

****Insert the DOS 3.3 SYSTEM MASTER. Type at the ] RUN COPYA and press return. Follow the directions on the screen.

**COPYING FROM A 5 INCH DISK TO A 3 INCH DISK**

***Use the GS system disk., opening up the **SYS. Utilities**; then open the file **SYSUTIL.SYSTEM**

***Format the 3 inch disk from the menu section **WORK ON ENTIRE DISKS**

***Select **COPY FILES** and press return.

***Individual files must then be copied to your destination disk. You will be asked where your source disk is..Slot 6, Drive 1... and where your destination disk is ...Slot 5, Drive 1. Then select the individual files you want copied.

**Not all will copy and run correctly...BEWARE!**

**COPYING A 3 INCH DISK TO A 3 INCH DISK (MACINTOSH)**

***Insert the systems disk in the internal drive.
***When the disk icon appears insert your destination disk in the external drive.
***Follow the prompts on the screen to initialize the disk.
***The newly initialized disk icon will appear on the monitor screen.
***Place the pointer on the system disk icon and click; it will turn dark. Then press the option key and the letter E to eject this disk.
***Insert the disk to be copied into the internal drive.
***Place the pointer on the disk icon to be copied; click and drag this icon onto the newly initialized disk icon and follow the instructions on the screen.

## GETTING APPLE PUBLIC DOMAIN SOFTWARE TO RUN

Very few public domain softwares have a menu that automatically appears when you boot up the disk. More often than not, you will have to look at the disk catalog and run the programs from it. How is it done?

1. Insert the disk into the disk drive and turn on your machine.

2. Make sure the caps lock key is depressed.

3. If there is no automatic menu, the initializing program will appear along with the basic prompt (]) and a flashing cursor.

4. At the flashing cursor, type **CATALOG** and press return.

5. Here is a sample of what will appear:

```
A 002 HELLO
B 014 ALLEY CAT
B 020 SMALL SMALL WORLD
I 011 CHRISTMAS TREE SONG
I 022 DECK THE HALLS
I 029 MUSIC GENERATOR
A 021 HAPPY BIRTHDAY
A 013 BACH
```

6. This is a list of the files, or programs, that are on the disk .

7. Notice the letters **A, I,** and **B** at the far left. These indicate whether the program is written in Applesoft Basic, Integer Basic, or is a Binary file.

   a. Programs with **A** in the left hand column run when you type **]RUN filename.** These programs are written in Applesoft Basic.
   b. Programs with a **B** in the left had column run when you type **]BRUN filename.** These are binary files.
   c. Programs with an **I** in the left hand column must have the DOS 3.3 system master booted in first. Then at the prompt type **]RUN filename.**

**IT IS <u>VERY</u> COMMON TO RUN INTO PROGRAMMING ERRORS IN PUBLIC DOMAIN PROGRAMS. SOME CAN BE EASILY FIXED; SOME TAKE A GOOD KNOWLEDGE OF THE PROGRAMMING LANGUAGE. ON THE OTHER HAND, SOME RUN LIKE A CHARM. TRY YOUR LUCK!!**

TABLE I

NMTAM'S BEST APPLE PUB. DOMAIN SOFTWARE

11-20-1988 AT 16:24

| #: | TITLE: | DESC: |
|---|---|---|
| 005 | ART | paint program using a joystick, with 15 colors |
| 010 | MATH | 10 programs compiled by Lesley College |
| 013 | MATH PRIMARY | simple math programs with counting, simple problems |
| 014 | GAMES PRIMARY | very easy games for young children, many req. joystick |
| 015 | LANG. ARTS | dictionary game, grammar rules, parts of speech |
| 016 | TEACHER UTIL. | readability, grade book, test maker/taker |
| 021 | SCIENCE ELEM. | simulations, ecology, psychology, astronomy |
| 022 | SPACE RACE | 5 program options for math, reading, lang. arts |
| 025 | APPLE CLASSICS | old time favorites like Lemonade & Wumpus |
| 027 | GRAPHING | draws and prints out pie and bar graphs |
| 028 | STRAT.GAMES 1 | 16 games that require logic and thinking |
| 029 | STRAT.GAMES 2 | more games including Rubik's cube |
| 030 | SPELLING | 6 word and spelling games |
| 033 | GENEOLOGY | database |
| 034 | SOCIAL STUDIES | 9 games on the 50 states |
| 035 | MUSIC | variety of songs, compose your own music |
| 036 | DISKASAURUS | 5 programs with the dinosaur theme |
| 037 | LIVING THINGS | introduction to the kingdom of living things |
| 038 | INSECTS | 6 programs with the insect theme |
| 039 | HISTORY SIMUL. | problems of early English merchants, time of Fr. Drake |
| 042 | SPREADSHEET | spreadsheet with docs |
| 044 | FIREGROUND | simulation of a fire truck finding its way to a fire |
| 046 | HOME EC. | food values, calorie counts, stocks, mortgages |
| 048 | GENERAL DB | easy to use database |
| 049 | FREDWRITER | word processor |
| 052 | TIGUE'S WORDS | builds word searches from your words |
| 053 | DIVERSICOPY . | copy program |
| 055 | TELECOMMS. | teaching unit on telecommunications |
| 056 | JUNIOR WRITER | word processor for primary children |
| 058 | KID-MAIL | telecommunications simulation for kids |

| | TOTAL | AVG |
|---|---|---|

Printed 30 of the 30 records.

## IBM PUBLIC DOMAIN SOFTWARE

Getting IBM Public Domain software to work takes a certain amount of sophistication which includes understanding the Disk Operating System (DOS); displaying, what is on your disk; running BASIC programs; running BASIC with one floppy drive; running BASIC with two floppy drives; starting EXE, COM, or BAT files; understanding filename extension conventions; and formatting and copying disks.

**TABLE 2** presents all the necessary information (see pages 10 and 11 for Table 2). This material is taken from the PC-SIG LIBRARY (Fourth edition) by PC-SIG, INC., 1030 E. Duane Ave, Suite D, Sunnyvale, CA 94086. It was published in March of 1987.

Table 3 (see page 12) presents what NMTAM members think are the 30 best IBM Public Domain Software available.

## 3.4 Running BASIC with one floppy drive

Table 2

**Method 1:**

After loading the DOS, you type BASICA ENTER at the DOS prompt (A>). After the BASIC screen comes up and greets you with its cheery "OK", remove the DOS disk and put the program disk in the A: drive. Then you type LOAD "filename.BAS" and press ENTER. When the OK returns, type RUN ENTER. Your BASIC program will then "come up" for you.

***** Two Noteworthy Things: *****

First, when you enter the filename in the LOADing process, you do not need to type the ".BAS." Second, if you examine the disk contents from DOS by running a DIR, you will find most times that there is a MENU.BAS or a MAIN.BAS or a INTRO.BAS named file; choosing these brings you to a selection menu allows you to choose from the entire contents of the disk/program without having to exit and reselect by the above step-by-step method. There are easier ways! See Below!

**Method 2:**

Use the COPY command to put a copy of the BASIC or BASICA.EXE file from your working DOS disk — don't use the ORIGINAL! -onto your program disk. PRECAUTION: Run a DIR to be sure there is enough free space on your floppy disk to add it! When you have loaded the DOS, you can swap disks and enter BASICA filename ENTER. In one command you will load BASIC and load and run your BASIC program of choice. Not bad, eh?

**A variation on this theme:**

Format a disk with the command "FORMAT A: /s", the "/s" telling the DOS to put the system files onto it. Next, copy COMMAND.COM onto it. With these there, if you add the BASIC or BASICA to it, you can then copy the BASIC programs of your choice to this disk with two excellent results: One is that you have a working copy of your PC-SIG program disk, "working" meaning you can store files on it as well as you can boot your system from this disk instead of "doing the DOS swap and shuffle" all the time. The second is that your original PC-SIG is now a MASTER which protects you against losing your valuable programs and all those records and data thereon.

## 3.5 Running BASIC with two floppy drives

**First method:**

With a two drive system, load DOS and then put the DOS disk in drive B: and the program disk in drive A:; then type the following:

B: filename (press ENTER or ↵)

**Second method:**

With your DOS disk in drive A: type:

BASICA (press ENTER or ↵)

When your screen displays an "ok" prompt, remove your DOS disk and place your program disk in its place. Then type:

RUN "MENU" (press ENTER or ↵).

Now you are ready to go. This method of running BASIC should work on all computers; however, your computer may have a more efficient way of accomplishing the same task. Because of the many different variations between computers, it is impossible to list the most efficient way to run chain programs. As your knowledge of your machine increases, you will be able to develop your own short-cuts and methods.

### 3.5.5 Starting EXE, COM, or BAT Files

As mentioned above, many of the Library's programs have been compiled into files which are marked with the file extension .COM or .EXE; some of them end with .BAT and will execute a series of commands in DOS automatically. While different in substance and origin, they all can be run in the same manner.

With .EXE, .COM, or .BAT files, you do not have to load BASIC or any other program to start you application. For example, to run a program named FUNYFACE.EXE (or FUNYFACE.COM or FUNYFACE.BAT) all you have to do is type: FUNYFACE and then press the ENTER key.

***Published by:***

PC-SIG, INC.
1030 E. Duane Avenue, Suite D
Sunnyvale, CA 94086

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ISBN 0-915835-05-3



## 3.6 Filename extension conventi .s

Certain filename extensions have been adopted for specific types of files. These extensions tell you the user what kind of material is in a file.

The following table shows the extension conventions that are generally used, although there may be exceptions. "Listable" means that they are text files that may be typed using the DOS "TYPE" command, copied to a printer, or viewed using a text editor. Please refer to the Glossary at the end of this book for any unfamiliar terms used in this table.

| | |
|---|---|
| .ABS | Abstracts: brief, listable program descriptions |
| .APL | APL source files |
| .ASC | Listable ASCII text files |
| .ASM | Listable assembly language source files |
| .BAS | BASIC source files |
| .BAT | Listable batch files |
| .C | Listable C language source files |
| .COM | Command files that are directly executed by typing the filename from DOS |
| .DAT | Data files |
| .DBF | dBASE II or III data files |
| .DOC | Listable document files |
| .EWF | Easywriter text file |
| .EXE | Executable files by typing the filename directly from DOS |
| .FOR | Listable Fortran source files |
| .NDX | dBase II or III index files |
| .OBJ | Object files (used by a linker) |
| .PAS | Listable Pascal source files |
| .PIC | Color graphic screen images |
| .PRG | Listable dBase II or III program files |
| .TXT | Listable text files |
| .UNP | Text files describing how to 'unprotect' |
| .VC | Visicalc templates |
| .WKS | Lotus 1-2-3 worksheets |
| .WRK | Symphony worksheets |
| .WS | Wordstar text file |

## 3.7 Formatting and Copying

Formatting a blank disc is required before you can copy files to it. Notice the operative word here is "blank". Always make sure the disk you are formatting is blank or you will lose whatever information you had stored on that disk prior to formatting.

To format a blank disk using a two-drive disk system, insert your DOS disk in drive A: (remembering, of course, that you have A> showing on your screen) and type:

FORMAT B: (press ENTER or ↵).

You will be told to then put a disk in drive B: (in single drive machines you will be told when to switch disks). Place the blank disk in drive B: and press RETURN. You will then be asked on your screen whether you wish to "Format Another?" You then have the option or either formatting another disk or returning to DOS. Your screen should resemble the following:

```
Formatting...Format complete

362496 bytes total disk space
362496 bytes available on disk

Format another (Y/N)?
```

The DISKCOPY command is used to make a copy of an entire program on your freshly formatted disk. Making a backup copy protects you in case the original disk is damaged, lost or erased. To make a copy of a disk, put your DOS disk in drive A:. To get to A> type:

A: (press ENTER or ↵)

When your A> appears type:

DISKCOPY A: B: (press ENTER or ↵).

You will then be told to insert your Source (original) disk in drive A and your Target (blank, formatted) disk in drive B. Those will single disk drive machines will be told when to alternate between drives A and B in order to complete the transfer. After you have accomplished this your screen should read:

```
Copy complete
Copy another (Y/N)?
```

If you want to copy another strike Y (yes) or N (no) if you're completed with the copying process; then press ENTER.

Often it is useful to add files to a disk, such as BASICA.COM to a public domain disk, so you can easily run BASIC programs. Or, you can create disk with selected files of your choice. Because of the varying structure, the most common format for copying BASICA from the disk in drive A to the disk in drive B is to type:

COPY A:BASICA.* B: (Press ENTER or ↵)

Here the wildcard symbol, *, is used to copy multiple files. We used the wildcard symbol in the above example because compatible systems general have more than one BASICA file.

## 3.1 Disk Operating System (DOS)

DOS is the heart of your system. It contains the necessary information for your computer to understand the commands you type in from the various programs. This allows you to retrieve information from a diskette or hard disk. You must start with DOS before using any program from our library.

Below are 5 basic DOS commands you will use:

| | |
|---|---|
| DIR | Abbreviation for DIRectory. Allows you to view the names of the files on the disk. |
| DISKCOPY | Allows you to make copies of the entire disk. |
| FORMAT | Enables you to prepare a blank disk for use by your computer. |
| COPY | Allows you to copy files from one disk to another or to the printer. |
| TYPE | Enables you to display the contents of the text on the screen. |

Insert your DOS program disk in disk drive A: and turn on your computer. Please refer to your system manual if you are unsure of your disk drive locations. As your machine whirs to life it may display a numerical count of your memory on the screen followed by a beep and a red light appearing over your disk drive A. Lock your DOS diskette in your A drive and you are off. The machine is now reading your DOS disk. You may be asked to fill in a date or a time (all time is in military time with midnight being 2400) or you can just press return each time the questions are asked. Once completed the A> is followed by a blinking cursor. Congratulations, you have just booted your computer. Booted, in this case, having good connotations. You are now ready to run your programs.

Following the A> type (in either lower case or upper case):

```
DIR          (press ENTER or ↵).
```

All DOS commands require that you depress the ENTER or ↵ key to activate the command. Your screen should now show a table of names and numbers similar to the following illustration:

```
Volume in drive A is MS0053Z0-01
 Directory of A:
ANSI        SYS      1651     7-07-86     12:00p
APPEND      COM      1725     7-07-86     12:00p
ASSIGN      COM      1520     7-07-86     12:00p
ATTRIB      EXE      8234     7-07-86     12:00p
CHKDSK      EXE      9680     7-07-86     12:00p
COMMAND     COM     23612     7-07-86     12:00p
DISKCOMP    EXE      3808     7-07-86     12:00p
DISKCOPY    EXE      4096     7-07-86     12:00p
DRIVER      SYS      1102     7-07-86     12:00p
EDLIN       EXE      7356     7-07-86     12:00p
EXE2BIN     EXE      3050     7-07-86     12:00p
FC          EXE     14558     7-07-86     12:00p
FDISK       EXE     16830     7-07-86     12:00p
FIND        EXE      6403     7-07-86     12:00p
FORMAT      EXE     11005     7-07-86     12:00p
GRAFTABL    EXE      8210     7-07-86     12:00p
GRAPHICS    EXE     13170     7-07-86     12:00p
JOIN        EXE      9012     7-07-86     12:00p
KEYBDV      EXE      2886     7-07-86     12:00p
KEYBFR      EXE      2948     7-07-86     12:00p
KEYBGR      EXE      2940     7-07-86     12:00p
KEYBIT      EXE      2892     7-07-86     12:00p
KEYBSP      EXE      2983     7-07-86     12:00p
KEYBUK      EXE      2886     7-07-86     12:00p
LABEL       EXE      2750     7-07-86     12:00p
MODE        EXE     13928     7-07-86     12:00p
MORE        COM       282     7-07-86     12:00p
PRINT       EXE      8824     7-07-86     12:00p
RAMDRIVE    SYS      6462     7-07-86     12:00p
RECOVER     EXE      4165     7-07-86     12:00p
REPLACE     EXE      4852     7-07-86     12:00p
SORT        EXE      1898     7-07-86     12:00p
SUBST       EXE      9898     7-07-86     12:00p
SYS         COM      4607     7-07-86     12:00p
            34 File(s)   81920 bytes free
```

The first column in the illustration lists the name of the files on the disk. The second column is that file's three-character extension. The remaining columns of numbers represent, in order left to right, the size of the file, creation date and finally the time the file was created.

Please note that the creation date or "time stamp" will change whenever you modify and save a file; one of the available functions of DOS is as a timekeeper. However, you must initiate this by giving the date and or time when you boot the system up. Its up to you!

## 3.2 Displaying what is on your disk

Now comes the fun part. With the A> and blinking cursor on your screen remove your DOS disk from drive A: and place in your first program. To start some program in the library you simply have to type "GO" and you are off. These disk are marked with a "GO" on the disk. Others will require a little different approach. For example, after the A> on your screen again type:

```
DIR                    (press ENTER or ↵).
```

This will show you a listing of the files on the program you are about to run:

```
Volume in drive A is #Z70 vxx.xx
 Directory of A:
1-100       UPP     123662     1-27-86      4:12p
101-200     UPP     117056     1-27-86      4:19p
OFIND       BAT         85     2-09-86     10:08p
GO          BAT         20     2-09-86     10:09p
INDEX       TXT      38338     8-08-86      9:34a
MORE        COM        384     2-09-86     10:09p
ORDER       TXT       3463     5-05-86      1:59p
PC-SIG      TXT        388     5-05-86      1:59p
Q&A         TXT       3114     5-05-86      1:59p
README                2838     2-09-86     10:08p
SUBMIT      TXT       1758     2-09-86     10:09p
URESP       TXT        185     2-09-86     10:09p
            14 File(s)   68992 bytes free
```

In order to read the text included on this disk, return to the A> and type:

```
TYPE README            (press ENTER or ↵).
```

This will allow you to see what is on the text file as it scrolls (rolls) up your screen. To stop this rolling depress the CTRL and NUM LOCK keys simultaneously. The scrolling should stop allowing you to read the information at your own pace. To start the scrolling again strike any key. It is suggested that you print the information on your printer thereby allowing you to refer to it at any given time. To accomplish this after the A> type:

```
COPY README.TXT LPT1:      (press ENTER or ↵)
```

or

```
COPY README.TXT PRN        (press ENTER or ↵).
```

LPT1: means line printer #1 which works for most machines. PRN means printer and this works on the remaining machines. Your printer (if it is turned on) should now be merrily printing away.

Most library programs are either written in BASIC or have been compiled into .EXE or .COM files (see listings of file extensions below). Programs written in BASIC can be distinguished by the file extension .BAS after the filename. These require a different method of running the program.

First, these require you to load BASIC (or BASICA, the advanced form of BASIC). On a PC, this can be done by typing BASIC or BASICA and the filename of the program that you choose to run. On a PCjr you will need to load the BASIC ROM cartridge. Because the procedure depends a great deal on your system's configuration, we urge you to read the next section carefully to get comfortable with yours.

## 3.3 Running BASIC programs

Almost 30% of the programs in the PC-SIG Library are written in the BASIC programming language. It is crucial that you understand how to run them on your system, whether it has one or two drives, whether it is a standard IBM or a compatible configuration. This section is devoted to giving you a clear step-by-step set of directions for these situations.

Please note that in following sections mention of the program BASIC.EXE is replaced by an all-inclusive use of the term BASICA for the program BASICA.EXE, the Advanced form of BASIC introduced with DOS 2.0 and above. Using the command for BASICA will invoke all the earlier forms of BASIC. For systems using MicroSoft's GWBASIC, the BASIC interpreter of the MS-DOS world, or other forms of BASIC, please see your Users Manual.

Why the difference between PC-DOS and MS-DOS? IBM placed part of its BASIC language into two hardware chips on the systemboard (called ROMs) and the rest is on the PC-DOS disk; hence you need both present to run BASIC/BASICA programs. The BASIC of MS-DOS is on disk. Simply put, for IBM-specific programs, you must have a version of PC-DOS running on your IBM PC.

Table 3

NMTAM'S BEST IBM PUBLIC DOMAIN SOFTWARE

11-20-1988 AT 16:11

| #: | TITLE: | DESC: |
|---|---|---|
| 018 | *IQBUILD | BASIC games, IQ Builder series plus others, EDC |
| 076 | *HISTORY ED. | history lessons for mid school |
| 095 | *MATH TUTOR | EDC math tutor program |
| 153 | *HANGMAN | best hangman game around |
| 229 | *FUNNEL/BUCKETS | good collection of educ. games, EDC |
| 249 | *EQUATOR | excellent educ. science programs,EDC |
| 320 | *TOUCHTYPE | EDC program for keyboarding skills |
| 343 | *WORD PROC/KIDS | excellent word processing program for young children |
| 359 | *MOONBEAM | educ. astronomy programs |
| 407 | *VIDEO CHEM | shows chemical structures through programmed lessons |
| 480 | *PC-OUTLINE | WP comparable to ThinkTank |
| 647 | *AMY'S PRIM.JR | EDC early childhood programs for IBM PCjr |
| 686 | *HELPDOS | EDC, excellent MS-DOS tutor program |
| 705 | *KIDGAMES | EDC games for ages 2-10, excellent |
| 708 | *SPANISH HANGMN | EDC, spanish version of hangman, excellent |
| 709 | *CALENDAR MAKER | EDC makes calendars for any month or year |
| 714 | *DOTS/LABBITS | EDC, two fun games for young children |
| 756 | *MEMOIRS | electronic diary |
| 797 | *TEST | EDC, allows teacher to make own tests |
| 802 | *GAME OF LIFE | EDC, plays the original game of life |
| 839 | *BIRTHDAY CARD | makes birthday and Christmas cards |
| 844 | *ABC GAMES | EDC 6 ABC games for young learners |
| 871 | *FANCY LABEL | prints address labels |
| 879 | *BIORHYTHMS | EDC, excellent biorhythm program |
| 891 | *WHEEL/MISFORTU | EDC wheel of fortune game |
| 903 | *VAR GRADE | excellent gradebook program for teachers |
| 916 | *AMANDA'S LOTTO | EDC early childhood letter lotto game |
| 922 | *WHIZKID | EDC, several problem-solving games, test-maker |
| 939 | *MORSE CODE | EDC, teaches morse code |
| 993 | *STRATEGY GAMES | EDC, fun strategy games for kids |

| | TOTAL | AVG |
|---|---|---|

Printed 30 of the 30 records.

We have selected the 30 best Apple and the 30 best IBM public domain programs to show you in our slide show. If a program is available for Apple, this is a comparable IBM program and vice versa. Each public domain software program has a brief description.

**SLIDE**

1 SLOT MACHINE
Monies for software purchase are never enough. So since we're in Reno, we saw the perfect chance to enhance those software budgets and enjoy doing it...THE SLOT MACHINE!!!
seriously, budgets and costs are a very real problem. We're here to help you solve that problem.

We'll begin with some core software offerings in public domain.

2 FREDWRITER
Fredwriter is an easy to use word processor with many options.

3 FREDWRITER PROMPTED WRITING
Available with Fredwriter are several prompted writing disks, from writing fables and plays to writing poetry. Disks filled with ideas to use with Fredwriter are also available.

4 PC-STYLE
The program checks a text file for correct grammar and syntax. It also gives a readability level and world be useful in any writing program from about 3rd grade and up.

5 PC-OUTLINE
This program is useful in teaching students how to develop outlines. It provides the structure for formulating an outline, allowing the student to concentrate on the content. it also works with a mouse.

6 PC-FILE
This easy-to-use database provides multiple search capabilities, performs simple math functions, and prints in 80 or 132 columns. It also prints in numeric or alphabetic order and is very fast. It would be a good program to use to introduce the concepts of databases to students. it also works with PC-WRITE, a word processing program by the same author, Jim Button.

7 DATABASE-CAREERS
Career search is a great way to demonstrate the use a data base. After the student selects interests and talents, the computer will generate a list of jobs or careers that might be appropriate for the student...all the way from a parking lot attendant to a nuclear engineer.

8 PC-CALC
This spreadsheet is very similar to the SuperCalc series. It offers all of the options of any basic spreadsheet and has several advanced features. It is also interactive with PC-FILE and PC-WRITE, again by Jim Button.

9 KIDMAIL
This is a telecommunications simulation. Students can leave and receive messages without costly telephone lines.

**SLIDE**

10 TYPING TUTOR
This beginning typing program teaches keyboarding skills as well as other keyboard features. The beginning levels teach finger positioning; then it moves through typing words, sentences and phrases.

11 TYPING TUTOR
It also calculates and shows the speed of the typist.

**What software is available for young children?**

12 DINO DERBY
In Dino Derby the child must hit the correct key to get his dinosaur to advance and try to out run the computer's dinosaur.

13 WORD PROCESSING FOR KIDS
This is one of the best IBM programs available for word processing with young children. It displays on screen and prints in 20 columns.

14 WPK
The menu uses icons for ease of use, and the children we have used this program with love to see their stories and poems in print with this program.

15 JR WRITER AND FILER
Junior Writer and Junior Filer, on the same disk, are very simple to use. The word processor will print out in expanded type. Junior Filer is an excellent introduction to creating a very simple data base.

16 AMANDA'S LETTER LOTTO
This is a great program for early childhood. It contains several alphabet games, and will display in alphabetic order or in the order that the child presses the letters.

17 AMANDA'S LETTER LOTTO
As you can see, the graphics in this program are quite good.

18 ABC FUN
Another alphabet program that teaches letter skills, this one also plays accompanying music.

19 EARLY CHILDHOOD PROGRAM
This pre-school fun pack is a selection of very simple games mostly requiring the manipulation of joy stick. These games are ideal for children 5 years and under.

20 AMY'S FIRST PRIMER
This early childhood program focuses on letter and number recognition. This one is available for the PC or the PCjr.

21 DINOMAKER
Dinomaker is a program that requires the Logo language to be booted into your machine first. Children can pick from a selection of heads, feet, bodies, and tails to create their own dinosaur and then print it out.

**SLIDE**

22 KIDGAMES
This disk contains 5 games for early childhood. This particular one, called Mosaic, requires the child to match pieces of a puzzle to the one displayed.

23 MATH
This math game requires the child to do some logical thinking...how many added to one will give me four. Dots are available to help with the solution.

24 BIRTHDAY
This is just a fun computerized birthday card. It plays the happy birthday song. Graphics on the screen show the child's name and at the end of the card a piece of cake is gone.

**Now let's look at Math programs for all levels.**

25 NUMBER MUNCHERS
In this math game the problem must be answered correctly AND the monster must be avoided.

26 ZAP MATH
Zap Math-is a multiplication game played by two people. Two dice will roll. Multiply the two numbers correctly to receive the product number of points. You have the choice of continuing or not. If you continue, you may get zapped. You then loose all your points and it is the other person's turn.

27 FUNNELS AND BUCKETS
This math program is similar to MathBlaster. It provides drill and practice in the four basic math functions,

28 FUNNELS AND BUCKETS
and keeps score. It also keeps a Hall of Fame listing of the top scores.

29 TOWERS OF HANOI
Towers of Hanoi..requires logical thinking. The object is to move the rings so they will be in order with the largest being on the bottom. However, the student is not allowed to put a bigger ring on top of a smaller ring.

30 TAXMAN
Tax Man is a math factoring program. In a list of numbers the student picks a number..the tax man gets every factor of that number that is left in the list. The student tries to get more than the tax man..no mean feat indeed..sort of like the IRS and us.

31 MANDELBROTH MATH
This program uses advanced calculus formulas to generate unusual art images on the screen.

32 MANDELBROTH MATH
Although I have no idea how this works, I thought it was interesting and pretty to see!

**Here are some of the reading and vocabulary programs we found.**

**SLIDE**

33 SPACE RACE
Space Race is a series of five programs built around the Space theme...it includes a hangman game in which the student tries **NOT** to construct the space shuttle and some other language arts games.

34 HANGMAN
This is one of the best versions of Hangman I have seen. It includes five levels from easy to advanced,

35 HANGMAN
and is also available in a Spanish version and a French version.

36 VOCABULARY BUILDER
Vocabulary building for older students...the word is flashed on the screen with its meaning. Then after so many words there is a multiple choice quiz on the meanings of the words.

37 FRENCH VERB CONJUGATOR
For beginning French students, this program displays the conjugation of over 100 basic French verbs. There is also a Spanish version of this program.

**Now let's look at programs for Science.**

38 INSECTS
Insects is a series of 5 science programs on insects from learning and labeling the parts of the insect to questions about them.

39 NUTRITION
This nutrition program allows students to select different foods and then graphs the nutritional value of that food.

40 STARS
I love this astronomy program. The student picks a date; the computer generates a graphic of what the night time sky will look like on that date.

41 STARS
Then it draws in the constellations and rotates the sky graphic as it would look hour by hour.

42 LIGHT FORMATION
This simple program with a bit of animation is an explanation of how energy is released and light is formed.

43 CHEMISTRY
This interactive program introduces the basics of chemistry.

44 CHEMISTRY
It reviews each section at the end of each presentation.

45 MOLECULAR STRUCTURES
This chemistry program show a visual representation of 10 basic molecules and identifies the chemical make-up of each.

**We found programs appropriate for Social Studies.**

SLIDE

46 MAPS
This is a history simulation of a voyage around the world with Sir Francis Drake. Students must retrieve and read information in order to survive the voyage.

47 FIRE MAPS
Fireground is a map skills game. You are the driver of the fire truck. The address of a fire is given to you. You must get to the fire in the quickest time possible.

48 STATES
States is a whole disk of quizzes about the US. This particular one the student must identify the state by its shape.

**Strategy games abound.**

49 FRENCH MILITARY GAME
The purpose of this French Military Game is to outflank the black piece by moving the white pieces to surround it.

**There are even Music and Art programs in the public domain.**

50 MUSIC
This program allows the student to compose his own music and the computer plays it back.

52 MUSIC
Students select the notes and note lengths. The computer composes their music. As it plays a variety of colored bars appear on the screen in time to the music.

53 ART
Students are able to control the cursor and select colors to draw their own designs using the keyboard.

54 FINGER-PAINT
This drawing program uses either the keyboard or a mouse. It is in black and white only, but is a good introduction to drawing with the computer. It also prints the drawing.

55 CAD
This computer assisted design program allows the user to design blueprints, buildings, common objects, almost anything, and then displays them at any angle you choose in 3-D.

**We found many teacher utilities also**

56 GRADEBOOK
This is one of several excellent gradebook programs. These track student data and average grades. Most gradebooks provide a printout for each student entered.

57 CALENDAR MAKER
This teacher utility will print a calendar for any month after 1980.

**SLIDE**

58 CALENDAR MAKER
It will also print a calendar for the entire year.

59 CROSSWORD CREATOR
This program allows you to enter a list of words with clues, then creates a crossword designed to your specifications.

60 CROSSWORD CREATOR
It also prints out the answer key for the teacher.

**CONCLUSION**

Public domain software can provide a school or school district with inexpensive yet quality software. It is economical whether you are a beginner or a pro!

We demonstrated today that it is possible to match your need for high quality, low cost software with what New Mexico Technology and Media of the Council for Exceptional Children members feel is the best available public domain software for education.

A list of public domain vendors and other computer resources for teachers follow.

## PUBLIC DOMAIN SOFTWARE

MS-DOS PUBLIC DOMAIN VENDORS:

PC-SIG, INC.
1030 E. Duane Avenue, Suite D
Sunnyvale, CA 94086
($6.00 each)

California Freeware
1466 Springline Dr., Dept. M
Palmdale, CA 93550
($2.99 each)

People's Choice
P.O. Box 171134
Memphis, TN 38187-1134
(3.75 each)

APPLE PUBLIC DOMAIN VENDORS:

Apple Avocation Alliance
211 Cheyenne Avenue
Cheyenne, WY 82100

Big Red Computer Club
423 Norfolk Avenue
Norfolk, Nebraska 68701

CUE SoftSwap
P.O. Box 271704
Concord, CA 94527-1704

North Orange County Computer Club
P.O. Box 3616
Orange, CA 92665-0616

Check the advertising sections of major computer magazines for more vendors. Also check major bulletin board systems (CompuServe, Apple Link, The Source, Genie, etc.) for downloading capabilities. Many bulletin board systems offer public domain software as a part of their service. Check in your local newspapers for user groups in your area.

# Computer Resources For Teachers

| AUTHOR | TITLE | PUBL | DATE |
|---|---|---|---|
| | Measuring & Computing | Arco | 1984 |
| | Sharon's Beginners Computer Book | Sharon Publ. Inc. | 1984 |
| Asimov, Isaac | How Did We Find Out About Computers? | Walker & Co. | 1984 |
| | Norby and the Ghost Princess | Walker & Co. | 1985 |
| | Norby and the Invaders | Walker & Co. | 1985 |
| | Norby's Other Secret | Walker & Co. | 1984 |
| | Those Amazing Electronic Thinking Machines | Franklin Watts Co. | 1983 |
| Bailey, David | Careers in Computers | Messner Co. | 1985 |
| Bearden, Donna | 1,2,3 My Computer & Me | Prentice Hall | 1983 |
| Berger, Melvin | Computers In Your Life | Crowell Co. | 1981 |
| | Robots in Fact & Fiction | Franklin Watts Co. | 1980 |
| Bethancourt, Ernesto | The Great Computing Dating Caper | Crown & Co. | 1984 |
| Billings, Charlene | MicroChip: Small Wonder | Dodd, Mead & Co. | 1984 |
| Bishop, Ann | Hello Mr. Chips | Lodestar | 1982 |
| Bitter, Gary | Exploring with Computers | Messner Co. | 1981 |
| Bolognese, Don | Drawing & Painting with Computers | Franklin Watts Co. | 1983 |
| Burnett, J. Dale | LOGO: An Introduction | Creative Computing Press | 1982 |
| Byars, Betsy | The Computer Nut | Viking Press | 1984 |
| Carter, A. & LeBlanc W. | Super Computers | Franklin Watts Co. | 1985 |
| Chetwin, Grace | Out of the Dark World | Lothrop, Lee & Shepard | 1985 |
| Christie, Linda | Almost Free Computer Stuff for Kids | New American Library | 1984 |
| Christopher, Matt | Supercharged Infield | Little, Brown & Co. | 1985 |
| Cohen, Daniel | The Question & Answer Book: Computers | Simon & Schuster | 1983 |
| Cooper, Carolyn | Electronic Bulletin Boards | Franklin Watts Co. | 1985 |
| Corbett, Scott | Home Computers | Little, Brown & Co. | 1980 |
| D'Ignazio, Fred | Chip Mitchell | E.P. Dutton | 1985 |
| | Electronic Games | Franklin Watts Co. | 1982 |
| | Invent your Own Computer Games | Franklin Watts Co. | 1983 |
| | Messner's Introduction to Computers | Messner | 1983 |
| | Small Computers | Franklin Watts Co. | 1981 |
| | The Creative Kid's Guide to Home Computers | Doubleday | 1981 |
| | Working Robots | Elsevier/Nelson Co. | 1982 |
| Dank, Milton | The Computer Game Murder | Delacorte Press | 1985 |
| Davies, Helen | Inside the Chip | Usborne Hayes | 1983 |
| DeWeese, Gene | Computers in the Arts | Franklin Watts Co. | 1984 |
| Fekete, Irene | Mathematics | Orbis Publ. | 1984 |
| Galanter, Eugene | Kids & Computers: Parent's Microcomputer Handbook | Perigee Books | 1983 |
| Greene, Laura | Computer Pioneers | Franklin Watts Co. 1985 | |
| Haukes, Nigel | Computers in Action | Franklin Watts Co. | 1983 |
| | Computers: How They Work | Franklin Watts Co. | 1983 |
| Hellman, Hal | Computer Basics | Prentice Hall | 1983 |
| Hintz, Sandy & Martin | Computers in Our World, Today & Tomorrow | Franklin Watts Co. | 1983 |
| Holland, Penny | Looking at LOGO | Franklin Watts Co. | 1984 |
| | Looking at Programming | Franklin Watts Co. | 1984 |
| Hyde, Margaret | Computers That Think | Enslow Books | 1982 |
| Jacobsen, Karen | Computers | Children's Press | 1982 |
| Jespersen, James | Rons, Rons & Robots | Atheneum | 1984 |
| Jollands, David | Language & Communication | Arco | 1984 |
| Keller, Charles | Ohm on the Range | Prentice-Hall | 1982 |

| AUTHOR | TITLE | PUBL | DATE |
|---|---|---|---|
| Kidd, Ronald | The Glitch | Lodestar | 1985 |
| Kleiner, Art | A Look Inside Robots | Raintree Books | 1981 |
| Lampton, Chris | BASIC for Beginners | Franklin Watts Co. | 1984 |
| | Computer Languages | Franklin Watts Co. | 1983 |
| | PASCAL for Beginners | Franklin Watts Co. | 1984 |
| | PILOT for Beginners | Franklin Watts Co. | 198' |
| | The Micro Dictionary | Franklin Watts Co. | 1984 |
| Landsman, Sandy | The Gadget Factor | Antheneum | 1984 |
| Lauber, Pat | Get Ready for Robots | Thomas Y. Crowell | 1987 |
| LeRoe, Ellen | Robot Romance | Harper & Rou | 1985 |
| Levy, David | Chess & Computers | Computer Science Press | 1976 |
| Lyttle, Richard | Computers in the Home | Franklin Watts Co. | 1984 |
| MacGregor, Ellen | Miss Pickerell Meets Mr. HUM | McGraw-Hill | 1974 |
| Markle, Sandra & Bill | In Search of Graphics | Lothrop, Lee & Shepard | 1985 |
| Math, Irwin | Bits & Pieces | Scribner Co. | 1984 |
| Milton, Joyce | Here Come the Robots | Hastings House | 1981 |
| Morris, Brian | The World of Robots | Gallery Books | 1985 |
| Niven, Larry | Dream Park | Ace Books | 1981 |
| O'Brien, Linda | Computers | Franklin Watts Co. | 1978 |
| Orbis Publ. | Computers: An Introduction | Orbis Publ. | |
| | Computers: Vol. II | Orbis Publ. | |
| Poirot, J. & Adams, C. | 10 Easy Steps to Programming | Sterling Swift | 1983 |
| Radlauer, Ruth & Ed | Computer Tech Talk | Children's Press | 1984 |
| Ray, Jo Ann | Careers in Computers | Lerner Co. | 1975 |
| Richman, Ellen | Random House Dictionary of Computer Literacy | Vintage Books | 1983 |
| Ruane, Pat | LOGO Activities for the Computer | Messner Co. | 1984 |
| Rutland, Johnathan | Exploring the World of Robots | Warwick Press | 1979 |
| Silverstein, Alvin | The Robots are Here | Prentice Hall | 1983 |
| | World of Bionics | Antheneum | 1979 |
| Simon, Seymour | Bits and Bytes | Thomas Y. Crowell Co. | 1985 |
| | Computer Sense, Computer Nonsense | Lippincott, Inc. | 1984 |
| | How to Talk to Your Computer | Thomas Y. Crowell | 1985 |
| | Meet the Computer | Thomas Y. Crowell | 1985 |
| | The BASIC Book | Thomas Y. Crowell Co. | 1985 |
| Southworth, Scott | Exploring High Tech Careers | Rosen Publ. | 1986 |
| Spencer, Jean | Exploring Careers as a Computer Technician | Rosen Publ. | 1985 |
| Sullivan, George | Computer Kids | Dodd, Mead & Co. | 1984 |
| Tatchell, Judy | Understanding Computer Graphics | Usborne Hayes | 1983 |
| Tyler, Jenny | Creepy Computer Games | Usborne Hayes | 1983 |

## INFORMATION DATA BASES

Title: BRS
Source: Bibliographical Retrieval Services
1200 Route 7, Latham, NY 12110
Description: Offers over 80 data bases including ERIC, TECC, and Academic American Encyclopedia

Title: CompuServe
Source: H & R Block, 5000 Arlington Center Boulevard,
P.O. Box 20212, Columbus, OH 43220
Description: Time-sharing service offering features such as electronic mail, a national bulletin board, a general-purpose encyclopedia, and The EDUCATIONAL SOFTWARE SELECTOR (TESS) from EPIE.

Title: DIALOG
Source: DIALOG Information Services, Inc.,
3460 Hillview Ave., Palo Alto, CA 94304
Description: A comprehensive system offering over 2000 data bases including ERIC and Microcomputer Index.

Title: ERIC (Educational Resources Information System)
Source: Available on DIALOG and BRS
Description: Over a half million educational citations (articles, speeches, research reports, books) with over 6,000 on computers in education.

## OTHER GENERAL RESOURCES

Minnesota Educational Computing Consortium (MECC), 3490 Lexington Ave., N., St. Paul, MN., 55126-9097

MicroSIFT (Microcomputer Software and Information for Teachers). Northwest Regional Educational Laboratory, 300 SW 6th Ave., Portland, OR 97204

The PC-SIG Library (4 ed.), (March 1987), PC-SIG, Inc. 1030 E. Durane Avenue, Suite D, Sunnyvale, CA 94086

PERIODICALS

Classroom Computer Learning. Peter Li, Inc., 2451 East River Rd., Dayton, OH 45439

Creative Computing. 39 East Hanover Ave., Morristown, NJ 07950

Electronic Learning. Scholastic, Inc. 730 Broadway, NY, NY 10003

Journal Of Special Education Technology Peabody College Of Vanderbilt University, P.O. Box 328, Nashville, TN 37203

Journal Of Technology Systems. Baywood Publishing Company, Inc. 120 Marine St., Farmingdale, NY 11735.

Media And Methods. American Society Of Educators, 1511 Walnut St., Philadelphia, PA 19102

Personal Computing. Hayden Publishing Co. Inc., P.O. Box 2942, Boulder, Co. 80322

T.H.E. Journal (Technical Horizons in Education). Information Synergy, Inc. 2922 S. Daimler St., Santa Ana, CA 92705

The Computing Teacher. Heldref Publications, 4000 Albemarle St. N.W., Washington, D.C. 20016.

BOOKS

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Behrmann, M. (Ed.) Handbook of Microcomputers in Special Education. San Diego: College Hill Press, 1984.

Budin, H.; Kendall, D.S.; Lengel, J. Using Computers in the Social Studies, New York: Teachers College Press, 1986.

Strickland, D.S., Feeley, J.T.; Wepner, S.B. Using Computers in the Teaching of Reading, New York: Teachers College Press, 1987.